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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/879,772	06/12/2001	David Geoffrey Brown	06000 USA	4163

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AIR PRODUCTS AND CHEMICALS, INC.
PATENT DEPARTMENT
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EXAMINER

SHERRER, CURTIS EDWARD

ART UNIT	PAPER NUMBER
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1761

DATE MAILED: 03/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/879,772

Applicant(s)

BROWN, DAVID GEOFFREY

Examiner

Curtis E. Sherrer

Art Unit

1761

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/23/02.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 5, 7, 16, 18, 26 and 29-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 8-15, 17, 19-25, 27 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 5.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of the restriction in Paper No. 7 is acknowledged. The traversal is on the ground(s) that the apparatus cannot be used for an aerobic fermentation. This is not found persuasive because applicants actually claim introducing oxygen containing gas into the apparatus (see claim 10).

The requirement is still deemed proper and is therefore made FINAL.

Claims 5,7,16,18,26 and 29-31 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected apparatus, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 7.

This application contains claims 5,7,16,18,26 and 29-31 are drawn to an invention nonelected with traverse in Paper No. 7. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4,6,8-15,17,19-25,27 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 11 are indefinite because there are no positive process steps recited in the claim. Further, the claims lack a traditional preamble phrase, e.g., consisting of, comprising, etc.

Claim 1 is indefinite because there is no antecedent basis for the phrase "the fermenting liquid."

Claims 12 and 22 are indefinite because there is no antecedent basis for the phrase "the concentration of generated carbon dioxide.."

Claims 2 and 13 are indefinite because there is no antecedent basis for the phrase "the saturation level."

Claims 9 and 20 are indefinite because there is no antecedent basis for the phrase "the brewing of beer."

Claims 4 and 15 are indefinite because there is no antecedent basis for the phrase "the opposite side."

Claims 23-25, 27 and 28 provide for the use of a gas permeable membrane, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 23-25, 27 and 28 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6, 8, 12-15, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dean Jr. et al. (U.S. Pat. No. 4,978,616)(hereinafter Dean).

Dean teaches a fluidized bed cultivation process wherein carbon dioxide, generated by the cells, is removed from the broad fermenting medium by a membrane oxygenator, such as a cartridge membrane of silicone tubing (col. 15, lines 1-40). The oxygen containing gas can be enriched air, and because it is notoriously well known that air contains nitrogen, therefore, the enriched air will inherently contains nitrogen. Dean states that "[o]bviously, in the broad practice of the present invention any of a wide variety of normally gaseous constituents may be added to, or removed from the recirculating liquid by properly selecting the membrane material with this arrangement and this aspect of the present invention need not be limited solely to aerobic processes. Therefore it would have been obvious to modify the processes performed by Dean to include anaerobic fermentations.

Dean does not teach whether the carbon dioxide level should be reduced to below saturation level. Because the saturation point of the carbon dioxide is a result effective variable, i.e., it begins to present itself in the form of foam, it would have been obvious to those of ordinary skill in the art to maintain the level of carbon dioxide below its saturation point.

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Claims 9-11 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' admissions' (pages 1-5 of instant application) in view of Dean.

Applicants admit that the foam, i.e., carbon dioxide, produced during the anaerobic fermentation to produce beer "is undesirable for a number of reasons." They list the lack of available fermentor volume, loss of broth components, increased costs, longer fermentations, and addition of undesirable chemicals. Applicants admit that when the content of the carbon dioxide exceeds the saturation limit, it produces foam. Applicants do not admit the use of a membrane to remove the carbon dioxide during the fermenting of the beer wort.

Dean teaches that cited above. It would have been obvious to those of ordinary skill in the art to remove the carbon dioxide that inherently builds up during a wort fermentation with a membrane as disclosed by Dean for the reasons set forth by applicants. It would also have been obvious to reduce the content of the carbon dioxide to below the saturation level so as to avoid production of foam for the reason set forth by applicants.

Applicants also admit that it is well known to introduce oxygen at early stages of fermentation to "provide a benefit to the fermentation performance." It would have been obvious to those of ordinary skill in the art to use the apparatus of Dean in the process as admitted to by applicants to add oxygen in order to benefit the performance of the fermentation.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Vaa et al. (WO Pat. No. 00/78916) teaches the reduction of foam on the surface of a fermenting wort.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis E. Sherrer whose telephone number is 703-308-3847. The examiner can normally be reached on Tuesday-Friday, 8AM-6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 703-308-3959. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3602 for regular communications and 703-305-3602 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in black ink, appearing to read 'C. E. Sherrer', with a horizontal line extending to the right.

Curtis E. Sherrer
Primary Examiner
March 18, 2003